

What is Claimed:

1. A film supply apparatus for a foam-in-bag dispenser system, comprising:

a support member;

a spindle supported by said support member, said spindle having a support extension for

5 receiving a roll of film for use;

and a spindle-to-support connector, with said spindle-to-support connector supporting

said spindle for adjustment of said spindle between a film feed to dispenser mode position and a

film roll replacement position different than said film feed to dispenser mode position.

2. The film supply apparatus of claim 1, wherein said spindle-to-support connector

10 includes a hinge which provides for rotation of said spindle between said film feed to dispenser mode position and said film roll replacement position.

3. The film supply apparatus of claim 1 wherein said spindle is arranged along a

longitudinal axis coinciding with an axis of roll rotation during feed out of film, and wherein said

film roll replacement position falls on an axis which is at least 25 degrees away from said

15 longitudinal axis.

4. The film supply apparatus of claim 3 wherein said angle is 60 to 120 degrees from the

longitudinal axis.

5. The film supply apparatus of claim 1 further comprising a roll retention latch provided

at a free end of said spindle.

20 6. The film supply apparatus of claim 5 wherein said roll retention latch includes a

handle member which is adjustable between a first position where the roll is axially slideable off

said spindle and a latch position wherein said roll is precluded from axial sliding off of said

spindle.

7. The film supply apparatus of claim 1 wherein said support extension is adjustable in axial length for accommodating different axial length film rolls.

8. The film supply apparatus of claim 1 further comprising a latch for fixing said spindle in said film feed to dispenser mode position, said latch including a latch component which is positioned for deflecting contact with a latch reception component supported by said spindle such that a rotation of said spindle from said film roll replacement position to said film feed to dispenser mode position automatically moves said latch into a latch state following deflection.

9. The film supply apparatus of claim 8 wherein said latch further comprises a release facilitator which includes means for pushing said spindle out from said film feed to dispenser mode position toward said film roll replacement position.

10. The film supply apparatus of claim 1 wherein said spindle has two axially spaced film roll mounting surfaces of different diameter, with an interior one being larger in diameter than a more outer one of said mounting surface which mounting surfaces are dimensioned relative to core inserts of the film roll which core inserts are dimensioned of different sizes so as to limit mounting of the film roll in only one axial orientation.

11. A film supply apparatus for use in a foam-in-bag dispenser, comprising:

a film source support for supporting a film source;

a film source driver;

a film source drive transmission in driving communication with said film source driver;

a film feed roller set positioned downstream with respect to film travel to said film source support,

a film feed driver in driving communication with said film feed roller set;

said film source drive transmission being in driving communication with said film source supported on said film source support to provide film web tensioning in the film being drawn by said film feed roller set.

12. The film supply apparatus of claim 11 wherein said film source support includes a spindle for receiving a roll of film and said film source drive transmission including a film source engagement member supported on said spindle.

13. The film supply apparatus of claim 12 wherein said film source engagement member includes a plurality of projections for engagement with a core insert of the film roll while supported on said spindle.

14. The film supply apparatus of claim 13 wherein said engagement member includes an annular ring having a plurality of circumferentially spaced projections separated by clearance areas.

15. The film supply apparatus of claim 14 further comprising a film roll with film core having a drive transmission core insert, said core insert comprising an annular ring with a plurality of projections and clearance spaces therebetween which are arranged for rotational driving transmission upon meshing with said annular ring of said engagement member.

16. The film supply apparatus of claim 15 wherein said film roll includes a non-drive core insert which is positioned at an opposite end of said film core and is in supporting contact with said spindle.

17. The film supply apparatus of claim 14 wherein said projections include tapered first contact extensions and base sections of greater thickness and having side walls for imparting rotational driving transmission to said film roll.

18. The film supply apparatus of claim 12 wherein said spindle is adjustable in length to accommodate different length roll cores.

19. The film supply apparatus of claim 11 further comprising a controller which is in communication with said film feed driver.

5 20. The film supply apparatus of claim 19 wherein said controller is also in communication with said film feed driver.

21. The film supply apparatus of claim 20 wherein said controller includes means for moving said film in a reverse direction opposite a direction of film feed induced by said feed roller set.

10 22. The film supply apparatus of claim 21 wherein said controller includes means for inducing tension in said film during idle periods wherein said film feed roller set is not operating.

23. The film supply apparatus of claim 19 wherein said film source includes a film roll support for supporting a film roll and the controller determines film roll diameter by comparing film feed velocity to angular velocity of the film roll while unwinding.

15 24. The film supply apparatus of claim 19 wherein said controller includes means for decreasing the level of torque upon an initiation or start up of film feed by said film feed roller set.

25. The film supply apparatus of claim 19 wherein said controller includes means for increasing the level of torque upon said film feed roller set discontinuing film feed drive.

20 26. The film supply apparatus of claim 19 wherein said controller includes means for monitoring an amount of film left on said roll and increases torque levels upon determining lowered amounts of film remaining on said film roll.

27. The film supply apparatus of claim 19 wherein said controller includes means for monitoring film status which includes means for generating a system shut down signal upon determination of a speed increase in said film source driver due to a removal of torque resistance upon film run out.

5 28. The film supply apparatus of claim 19 wherein said controller includes means for monitoring film status which includes means for generating a system shut down upon determination of a film jam based on a relationship determination of said feed roller set continuing movement but said film feed source driver sensing film tension levels deviating from a normal range of feed roller draw tensioning in the film.

10 29. The film supply apparatus of claim 11 wherein said film feed driver includes an encoder and said film source driver includes an encoder, and said controller includes means for determining film roll diameter from data provided by said encoders.

15 30. The film supply apparatus of claim 11 wherein film is passed by a foam dispensing unit located downstream with respect to film travel direction from the film source and upstream of said film feed roller set.

20 31. The film supply apparatus of claim 30 wherein the film is a C-fold film and wherein said dispenser is arranged with respect to film feed travel such that a C-fold edge travels outward of a forward end of said dispenser and said feed roller set includes an edge sealer which joins free edge portions of the C-fold film following travel of said free edge portions along opposite side walls of said dispenser.

 32. The film supply apparatus of claim 10 wherein said film source driver is arranged to move film backwards or in a direction opposite to a direction of film feed induced by said film feed roller set.

33. The film supply apparatus of claim 10 further comprising an idler roller over which the film travels in going between said film source support and said film feed roller set, and said film supply apparatus further comprising film web tracking adjustment means which alters said idler roller orientation to have said film properly track in traveling through said film feed roller set.

34. A film supply apparatus for supplying film in a foam-in-bag system, comprising:
film feeding means for feeding film from a film source to a location for bag formation;
a bag forming apparatus;

a foam material dispenser positioned for feeding foam material for reception in a bag of said bag forming apparatus;

a web tensioning system having a web tensioning driver in driving communication with the film source;

a controller for monitoring the film feed and web tension states and directing adjustments in said web tension system.

35. The film supply apparatus of claim 34 wherein said web tensioning driver is arranged to move film backwards or in a direction opposite to a direction of film feed induced by said film feeding means.

36. The film supply apparatus of claim 34 wherein the film source includes a roll of film and said web tensioning system includes a drive transmission in communication with the roll of film for rotational driving of the roll of film and also in communication with said web tensioning driver.

37. The film supply apparatus of claim 36 further comprising a spindle support for supporting the roll of film and wherein said drive transmission includes a spindle drive having a

plurality of projections for engagement with a core insert of the film roll supported on said spindle.

38. The film supply apparatus of claim 37 wherein said spindle drive includes an annular ring having a plurality of circumferentially spaced projections separated by clearance areas.

5 39. The film supply apparatus of claim 38 further comprising a film roll with a roll drive insert secured at an end of said roll and which is dimensioned for meshing rotation drive engagement with said spindle drive.

40. The film supply apparatus of claim 39 wherein said roll drive insert comprises an annular ring with a plurality of projections and clearance spaces therebetween which are
10 arranged for rotational driving transmission upon meshing with said spindle drive.

41. A method of supplying film to a foam-in-bag dispenser comprising:
feeding with film feeding means film from a film source past a foam dispenser;
maintaining a tension state in the film being fed by the film feeding means with a web
tension system which is in driving engagement with the film source by way of a drive
15 transmission connection to the film source.

42. The method of claim 41 further comprising monitoring a state of web tension with a controller which receives input data from both said film feeding means and said web tension system.

43. The method of claim 41 further comprising shutting down said film feeding means
20 upon a sensed film run out based on a comparison of data input from said film feeding means and said web tensioning system.

44. The method of claim 43 wherein said film source is a roll of film on a core and said web tension system includes a drive engagement member that meshes in rotational drive transmission fashion with said core.

45. A film roll core insert for use in a web tension system of a foam-in-bag system,
5 comprising an annular ring dimensioned for securement within a core end of a film roll and having rotation drive meshing means for rotational drive engagement with a driver of the web tension system.